

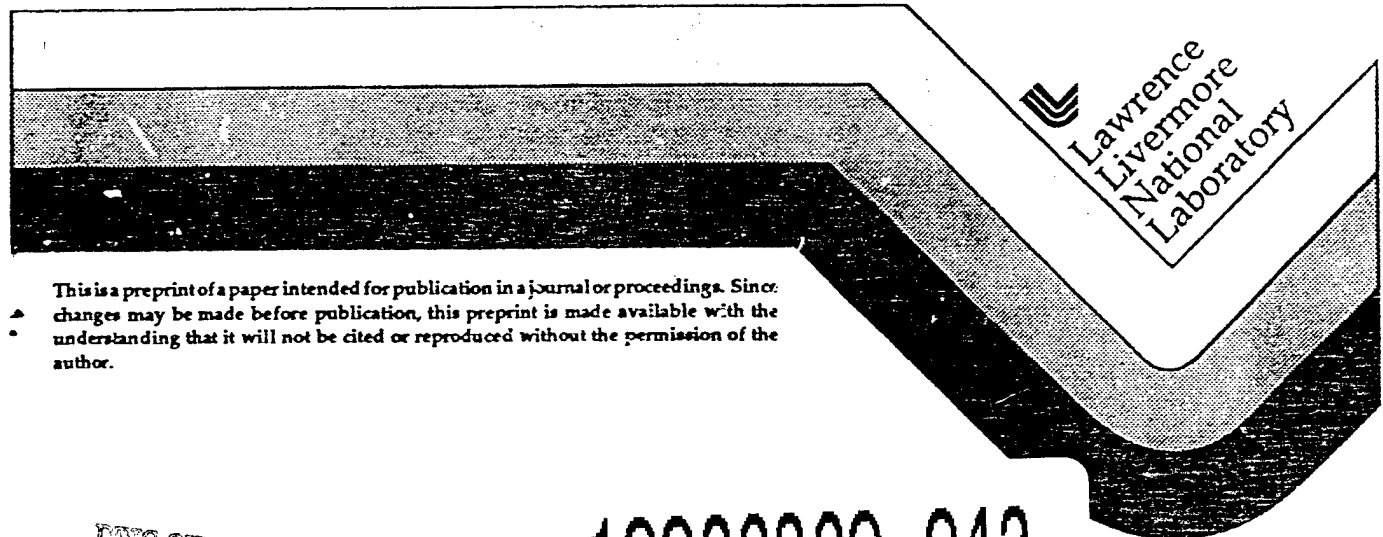
UCRL-JC-106720
PREPRINT

INTERNATIONAL DEFENSES AGAINST BALLISTIC MISSILE ATTACK: NOW, MORE THAN EVER

Lowell Wood

This paper was prepared for presentation in the
Post-Cold War Nuclear Dilemmas
II. Missile Defenses: More or Less Necessary Now?
session of
Defending America in the 1990's,
a conference sponsored by the American Enterprise Institute,
Washington, DC
February 20-21, 1991

March 4, 1991



This is a preprint of a paper intended for publication in a journal or proceedings. Since changes may be made before publication, this preprint is made available with the understanding that it will not be cited or reproduced without the permission of the author.

DTIC QUALITY INSPECTED 4

19980309 243

PLEASE RETURN TO:

BMD TECHNICAL INFORMATION CENTER
BALLISTIC MISSILE DEFENSE ORGANIZATION
7100 DEFENSE PENTAGON
WASHINGTON D.C. 20301-7100

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

114326

Accession Number: 4326

Publication Date: Mar 04, 1991

Title: International Defenses Against Ballistic Missile Attack: Now, More Than Ever

Personal Author: Wood, L.

Corporate Author Or Publisher: Lawrence Livermore National Laboratory, Livermore, CA Report
Number: UCRL-JC-106720

Comments on Document: Paper prepared for presentation in the Post-Cold War Nuclear Dilemmas II
Missile Defenses: More or Less Necessary Now? session of Defending America in the 1990's, a conference
sponsored by the American Enterpri

Descriptors, Keywords: International Defense Ballistic Missile Attack Threat Proliferation GPALS ABM
Treaty

Pages: 00007

Cataloged Date: Feb 18, 1993

Document Type: HC

Number of Copies In Library: 000001

Record ID: 26264

DISCLAIMER

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

INTERNATIONAL DEFENSES AGAINST BALLISTIC MISSILE ATTACK: NOW, MORE THAN EVER*

Lowell Wood
Special Studies Program
University of California Lawrence Livermore National Laboratory
Livermore CA

Introduction

I certainly wish to thank the AEI for the opportunity to speak to you today on such a crucial topic as the near-term need for international defenses against ballistic missile attack.

I'm delighted to be paired for the purposes of the present discussion with an outstanding American political leader such as Congressman Robert Torricelli, who has distinguished himself to many, myself included, by his principled leadership of the national advocacy for lasting peace and genuine security in the Persian Gulf. His hasn't been the easy path of those whose party and President have long pressed this issue, nor the popular path of those who hastened to rally 'round the flag, possibly obscuring their earlier contrary stances, after hostilities commenced. Rather, joined by a notable few of his own kind, Congressman Torricelli has linked arms during a defining period in American political life with traditional political opponents to raise a standard to all men valuing both international peace and security --- and loving the freedoms which must underlie them in the long run --- may honorably and, indeed, proudly repair. I most sincerely salute him for his principled, far-seeing and eminently practical stand in a time and town where shortsighted, partisan-blinded expediency too often reigns. I'm honored to share this topic with him today.

Perspectives On Ballistic Missile-Based Conflict Then And Now

Barely one year ago, Director of Central Intelligence William Webster, testifying in open session before the Senate Armed Services Committee, delivered the formal estimate of the Intelligence Community that, by the end of the present

* Work performed under the auspices of Contract W-7405-eng-48 between the University of California and the U.S. Department of Energy by LLNL.

This paper was prepared for presentation in the Post-Cold War Nuclear Dilemmas II. Missile Defenses: More Or Less Necessary Now? session of Defending America in the 1990s, a conference sponsored by the American Enterprise Institute, 20-21 February 1991, Washington, D.C.

The opinions stated herein are those of the author, and are not necessarily those of the Laboratory, the University, the USDoE or the USDoD.

DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED
MASTER

decade, ten Third World nations will be manufacturing ballistic missiles with at least intermediate ranges, six of these will actually have ICBM ranges and four will have the ability to equip them with nuclear warheads. In the far different, much more peaceful world of January 1990, Chairman Sam Nunn, a gentleman not much given to overstatement, stated that he found these estimates to be "*profoundly disturbing*." Informed as he is by the history of Third World source countries selling strategic warfare products for Western currencies without regard to downstream consequences, his deep concern then was entirely understandable.

Today, in a much grimmer world, we are at war with a nation whose leader has publicly boasted that his nation possesses chemical, biological and nuclear warheads for its Scud IRBMs. Two nations whose safety we have guaranteed are under attack almost nightly with these same Scuds, never knowing if or when the warheads thrown will be those of mass destruction. The Patriot anti-missile missile, our only present means of defending our protected nations and peoples from ballistic missile attack, is highly effective at interfering with the final, terminal phases of flight of conventional high-explosive warheads, but would be of distinctly doubtful utility if called upon to defend against Scuds bearing any flavor of weapon of mass destruction.

We read in the news that the wing of Israeli Jericho II IRBMs based near the Dimona nuclear facility are being loaded with warheads of unknown type and otherwise prepared for launch. No prudent man will speculate confidently as to the condition of metropolitan Baghdad three days after the first few hundred Jews are gassed to death in Tel Aviv by Iraqi Scud-delivered neurotoxins, a triggering event that could occur as early as tonight.

Elsewhere in this deeply troubled portion of the world, we presently have a second dictator whose has publicly aspired to the ownership of weapons of mass destruction and who has publicly declared his intention to use them on cities of both the United States and Israel, if and when he possesses them. Moammar Gadhafi differs from several fellow tyrants and other oil-rich strongmen on this score only in his mad-dog candor, as many of you are aware.

Chemical weaponry is the classic genie already escaped from the bottle. A single basement laboratory can produce each year strategically significant quantities of neurotoxins, amounts of nerve gas which could slaughter thousands of civilians in one or more population centers when delivered on a handful of IRBMs. The cruder forms of biological weaponry will follow the same basic path to effectively universal availability during the '90s, to the extent that such weaponry becomes fashionable --- which trend we may discover to our horror during the present conflict. Nuclear weaponry is far more readily possessed by a nation aspiring to limited but politically compelling capabilities than most anyone cared to admit --- until the focussing-of-mind drily attributed to condemned prisoners swept through the cognizant portions of the U.S. national security policy-making community during the past half-year.

The common denominator of all of these problems is, I submit, the means of carrying the weapons of mass destruction from the arsenal of the aggressor to the target areas of the victims. Nations long on cash and short on most every other 20th century commodity have understandably selected the ballistic missile as the delivery system-of-choice, simply because its turn-key character makes it a reliable politicomilitary instrument: it requires only a trusted few to operate, it won't bomb the Presidential palace on a bad weekend, and it can't be stopped by air defenses, no matter how sophisticated; not quite incidentally, it's also the emblem of superpower-hood. Pleasantly enough, from the standpoint of the ambitious dictator, purchased intermediate range ballistic missile capability is becoming remarkably inexpensive, and multiple, quite discreet sources are appearing in the international arms market already. The Red Chinese will soon have to scramble to preserve their market for longer-range death-delivery tool-sets.

Supply- And Demand-Side Suppression Of Ballistic Missile Proliferation

Against this already voracious and rapidly growing demand for IRBMs and, among the market's top-end, ICBMs, we have a plethora of proposals for supply-side management of the overall problem. Against the reasonable observation that such supply-limiting efforts have proven remarkably ineffective in the recent past, proponents promise that the new means will be completely serious, and will have real teeth. I'm among those who wonder if such well-intentioned folks even can talk about seriousness in the same terms as the cash-hungry butchers of Tiananmen Square, and how the teeth they contemplate compare with that involved in keeping 20 million men under arms to hold down a nation of 1100 million people yearning to breathe free. In any case, such folks will be challenged, perhaps tellingly, by others who will cry, "Those who have had N years to insure the international peace regarding ballistic missile proliferation and who have obviously failed should not be given another chance!"

I suggest to you this afternoon that demand-side management of the ballistic missile proliferation problem of a completely serious nature, replete with real teeth, is likely to be the more successful single means of dealing with this rapidly rising problem. Instead of (or certainly, in addition to) trying to twist --- and keep severely twisted --- the arms of every cash-starved IRBM producer and dealer all over the world, I suggest that we simply diminish the perceived value of their products well below their market-clearing costs, thus drying up the trade with the far more reliable albeit much less visible hand of self-interest.

Driving down the perceived value is most reliably done, I submit, by demonstrating repeatedly that IRBMs and ICBMs cannot be fired successfully by Third World countries, in that they will invariably be destroyed before they reach their targets, no matter from where or when they are launched or to whence they are directed. Toward this end, even practice launches will be frustrated, so that lessons will be taught early-and-often, moreover in a maximally market-disrupting fashion.

The Pivotal Role Of GPALS

This, of course, is just the mission which President Bush recently assigned to the Strategic Defense Initiative Organization as the first major milestone for defense against ballistic missiles, known as Global Protection Against Limited Strikes, or GPALS. Specifically, he said in his State of the Union address three weeks ago, *"... I have directed that the SDI program be refocussed on providing protection from limited ballistic missile strikes, whatever their source. Let us pursue an SDI program that can deal with any future threat to the United States, to our forces overseas and to our friends and allies."*

In February 1991, we live in a world in which we literally don't know with certainty who all our allies will be next week, let alone next month; the geopolitical sands in the Mid-East are shifting perceptibly each day. One distinguished speaker noted here yesterday that, in the current conflict, we are allied with "one evil thug against another, because it's just a bad neighborhood." If the conflict gets really bloody, whose ally Syria or Iran or Jordan or even Egypt will be the following day depends on the deals and coups-d'-etat of the previous night, and General Schwarzkopf may have to look to the security of not only his front but also of his flanks and perhaps even his rear. The tasking on those charged with defending the troops and the peoples of the Kuwait Liberation Alliance against ballistic missile attacks will shift every bit as quickly, and there are no objective reasons to expect that challenges to international peace and security over the next couple of decades will be significantly less stressing than the present one.

Thus, if we are to meet the goals which President Bush has set out for defenses already needed by American forces and by America's friends and allies today, we must have defenses against ballistic missile attacks which are present essentially everywhere, and which are certain to function all the time. These defenses must be effective at sufficiently great distances from attacked targets that even mass-destruction weaponry is rendered completely ineffective, every time, everywhere, at any time.

Now such absolute performance specifications might seem idealized, even extreme, and certainly not worth the resources required to realize them. Reflect on this though, if you will, when you watch the evening news today, and ask yourself how much the U.S. might willingly pay in the present conflict to shield Israel from attack by nerve gas-bearing Scuds. I submit that the practical unit of currency in such a hypothetical insurance transaction is ten billion dollars, and that several such currency units might be the willingly paid premium. Such numbers arise simply and cold-bloodedly from considering the possible consequences of non-protection for the subsequent creation and operation of a then more radioactive New World Order and the corresponding impacts on U.S. defense expenditures in the present decade alone.

Now 1991 isn't the last time and Israel (or Saudi Arabia or Egypt) isn't the last protectorate which the U.S. will be called upon to shield from attack with ballistic

missiles possibly bearing weapons of mass destruction during the '90s, the more so if we re-establish peace and security in the Gulf imperfectly this time around.. Creating ballistic missile defenses-in-place against all such attacks buys a paid-in-full insurance policy for all of our friends and allies everywhere, as well as for those forces which we may be called upon to deploy for their defense against conventional aggression, at places and times not of our choosing or even reliably known to us in advance.

It is therefore remarkable that the Government's presently estimated cost to create a GPALS system --- around \$40 B --- is not only substantially less than the material costs of Operation Desert Storm, but that this would be one-time capital expenditure, sustained thereafter by an annual operating cost of the order of 1% of the capital outlay. Once created, it would provide continuing protection of the grade which President Bush specified for GPALS: against ballistic missile attacks of whatever origin, for America and for all America's forces, friends and allies, at any future time.

GPALS: Robustness Through Functional Redundancy

In order to provide very high reliability of protection, GPALS has the two-layer character of the defenses mounted by modern medicine against particularly fearsome disease epidemics: a non-specific global layer similar to universal vaccination, supplemented a specific, case-by-case defensive layer analogous to giving selected, severely exposed or weakened patients an injection of gamma-globulin to carry them through the crisis-of-contagion in a hyperimmune state.

The global defensive layer necessarily has a global character. It is based in low Earth orbit in the form of several hundred small surveillance satellites which can throw themselves in front of attacking IRBMs and ICBMs during the intervals in their flights when they are effectively above the atmosphere. It provides a high-attrition defense against missile attacks coming from anywhere going to anywhere, as President Bush has specified, moreover in a highly cost-effective fashion. Contrary to a widespread but technically unfounded belief, it will be effective in interdicting from space the attacks of even quite short range IRBMs, ones with ranges substantially shorter than we presently see being employed in the Gulf War.

The localized or specific defensive layer is provided in GPALS by a multiplicity of ground-based sites of Patriot descendents, ground-to-space missiles capable of interdicting IRBM or ICBM warheads sufficiently far from their intended targets that even mass-destruction armaments are effectively defeated, a performance level to which Patriot cannot aspire. This "ground underlayer", in defense jargon, interdicts at high altitude the fraction of the warheads which might leak through the space-based interdiction layer in a large-scale, salvo-launched attack, and thereby provides an additional level of insurance, different in kind and thus frailties, relative to the space-based layer, for exceptionally high-value areas, such as population centers. While of significantly lower cost-effectiveness than the space-based layer, the cost-effectiveness-at-the-margin of each of its

deployment bases is perhaps most aptly judged by its cost relative to the value of the target area for which it provides the last-ditch defense against not-unlikely attacks.

ABM Treaty Implications

It is quite unlikely that either type of GPALS defense can be deployed anywhere without modifications of the ABM Treaty. Indeed, one of the most amusing prevalent misconceptions of the recent SDI debate in the Congress was that ground-based defensive systems somehow are Treaty-permitted, while space-based ones are Treaty-proscribed. This was a massive, if probably unintended, tribute to the effectiveness of long-term Soviet propaganda on the subject. However, a reading of the ABM Treaty and its official history by a high-school student of normal intelligence would reliably produce the finding that the ABM Treaty was specifically negotiated and written and then ratified by the U.S. Senate to ban more than one single deployment site of a ground-based defensive system, and that space-based systems were not even explicitly addressed in the Treaty language or the Senate ratification debate.

Any multi-sited ground-based defensive system --- one that could defend Tel Aviv and Haifa, for instance, created with U.S. participation and which could arguably defend against longer-range IRBMs --- IRBMs which the Iraqis and the Pakistanis are developing and the Saudis have already bought from the Chinese --- would apparently not be consonant with the undertakings which the U.S. made in the ABM Treaty. Similarly, a space-based defensive system might or might not be Treaty-compliant, depending on whether it had actual or latent capability to defend North America against attacking Soviet missiles, whether it is determined to be based on "other physical principles," etc.

It isn't at all clear, I submit, that the Soviets will invariably oppose creation of some types of ballistic missile defenses focussed on relatively unique characteristics of the Third World threat. It undoubtedly nags at Soviet geopoliticians of all stripes that five nations other than the U.S., three of them Third World countries, can even now attack the territory of the Soviet Union with nuclear-tipped ballistic missiles; it undoubtedly dismays such Soviet folks to contemplate this number doubling during the present decade. As SDIO Director Henry Cooper has remarked, "*The Third World is much closer to the Soviet Union than it is to the United States.*"

Even at the present time, we see "*ordnung und rechnung*" politicians in the Soviet Union, such as Colonel Viktor Alkinis, Shevardnadze's *bete noire*, speculating publicly as to how soon the Soviet Union will need its own SDI to defend itself against its near-neighbors. Next year's specified bilateral review of the ABM Treaty is none too early to formally table the sizeable collection of such issues, and now is none too soon to commence serious discussions thereof --- first the really hard-nosed, head-to-head negotiations with ourselves, then the formal ones with the Soviets.

A Plea For ABM Policy-Making In The National Interest

Immediately after Soviet Foreign Minister Eduard Shevardnadze declared two years ago to the Soviet Parliament that the (still-extant) Krasnoyarsk radar was a manifest violation of the ABM Treaty, Congressman Tom Downey, whose school-of-thought on that particular subject suddenly found itself positioned to the left of the Soviet Government, said simply, *"All right. That issue's settled. Let's move on to the other matters before us."*

In this no-recriminations spirit and informed by last year's SDI debates in the Congress and by the long shadows thrown into the future by the present crisis in peace and security in the Persian Gulf, I say now to Congressman Torricelli and what I presume to be his school-of-thought on ballistic missile defenses, *"All right. Let's set aside until much later in this decade the issue of Strategic Defense System Phase I. Instead, let's rally around President Bush's appeal to reason with respect to GPALS, which the Gulf crisis has taught us all is certainly in the fundamental, and possibly even in the supreme, national interest of our country. Let us thereupon address the Soviets in the ABM Treaty Review next year in a completely united, bipartisan fashion, speaking candidly to the recently recognized requirements of our fundamental national security interests, while respecting their genuine ones. Let's offer them a manifestly fair deal in the way of Treaty modifications which respects the basic interests of both nations and which permits GPALS creation, and then let's have the self-respect to walk away from any and all bad deals, including the Treaty-as-it-stands, if that's all we're offered in return."*

Thank you all for your attention and your consideration.



Defending America in the 1990s

February 20–21, 1991
Ballroom A, Washington Vista Hotel
1400 M Street, N.W., Washington, D.C.

Wednesday, February 20

Assessing the Strategic Challenge

9:00–10:30 a.m. The Soviet Crack-up: Implications for Security

Chairman: Owen Harries, National Interest

"Empire's Twilight: Soviet Strategy beyond Gorbachev"

Richard Pipes, Harvard University

"Dangers from a Dying Bear"

Charles H. Fairbanks, Jr., School of Advanced International Studies

"The Fate of the Republics"

Paul Goble, Department of State

"Europe's Future: Security through a 'Common Home'?"

Josef Joffe, *Süddeutsche Zeitung*

Questioners

Amity Shlaes, *Wall Street Journal*

Will Tobey, National Security Council

10:45–12:15 p.m. Iraq: Strategic Exception or Strategic Paradigm?

Chairman: Richard N. Perle, AEI

Panelists

Eliot A. Cohen, School of Advanced International Studies

Edward N. Luttwak, Center for Strategic and International Studies

Albert C. Wohlstetter, Pan-Heuristics Services

Questioners

Paul Gigot, *Wall Street Journal*

Michael Vlahos, Center for Study of Foreign Affairs

12:30–2:00

Luncheon: Monticello Room

Address: Senator **Robert J. Dole**

2:15–3:45

Arms Proliferation

Chairman: Patrick Glynn, AEI

“A Forest of Missiles”

Michael Nacht, University of Maryland

“The Growing Nuclear Club”

Leonard Spector, Carnegie Endowment

“Chemical Nightmares”

Douglas Feith, Feith and Zell

“Third-rate Powers, First-rate Weapons?”

Daniel Pipes, Foreign Policy Research Institute

Questioners

Michael Gordon, *New York Times*

Richard Speier, Department of Defense

4:00–5:30

Reassessing America's Global Interests

Chairman: Jeane J. Kirkpatrick, AEI

“America: In or Out of the New Europe?”

Jed C. Snyder, Washington Strategy Seminar

“If Nanny Leaves: Asia after the Cold War”

Chong-Pin Lin, AEI

"Keeping Safe in a Global Neighborhood"

Patrick Glynn, AEI

"Liquidating Commitments: Defining Strategic Irrelevance"

Mark Falcoff, AEI

Questioners

Mary Eberstadt, *National Interest*

Michael Lind, Center for Study of Foreign Affairs

Thursday, February 20

Building a Post-Cold War Strategy

9:00-10:30 a.m. The Poorly Paid Constable:
How Much Security Can America Afford?

Chairman: Gen. Bernard Schriever, AEI

Panelists

Barry Blechman, Henry L. Stimson Center

Edward N. Luttwak, Center for Strategic and International Studies

William Schneider, International Planning Corporation

Herbert Stein, AEI

Questioners

Gordon Adams, Defense Budget Project

Dov Zakheim, Systems Planning Corporation International

10:45-12:15 p.m. Slicing the New Pie

Chairman: Senator Trent Lott (invited)

"Projecting Power: How and Where Now?"

Eliot A. Cohen, School of Advanced International Studies

"Old Doctrine versus New Ideas"

Fred C. Iklé, Former Under Secretary of Defense

"Technology and Manpower in the New Age"

Charles M. Herzfeld, Department of Defense

"Preserving the Defense Industrial Base"

John S. Foster, Defense Science Board

Questioners

Barton Gellman, *Washington Post*
Paolo Liebl, Georgetown University

12:30-2:00

Luncheon: Monticello Room

Address: The Honorable **Dick Cheney**, Secretary of Defense

2:15-3:45

Post-Cold War Nuclear Dilemmas

Chairman: **Kenneth L. Adelman**, Former Director, Arms Control and
Disarmament Agency

"Is the Strategic Triad Obsolete?"

Senator **William S. Cohen**, Senate Armed Services Committee
Richard N. Perle, AEI

"Missile Defenses: More or Less Necessary Now?"

Lowell Wood, Lawrence Livermore National Laboratory
Representative **Robert Torricelli**, House Foreign Affairs Committee

Questioners

Sven Kraemer, American Security Council
Jacob Weisberg, *New Republic*

4:00-5:30

A New World Order?

Chairman: **Christopher C. DeMuth**, AEI

Panelists

Jeane J. Kirkpatrick, AEI
Irving Kristol, AEI
Joshua Muravchik, AEI
Ben Wattenberg, AEI

Questioners

Doug Bandow, Cato Institute
E. J. Dionne, Jr., *Washington Post*